

In the Claims

28. (Once Amended) Apparatus in accordance with Claim 24 further comprising probe means for sensing exhaust gas pressure during engine operation, and engagement means secured to said probe means for securing said probe means so that said probe means at least partially extends within an exhaust path of the engine during engine operation.

REMARKS

Claims 1-8, 21-36, and 47-57 are pending in the present application. In the Office Action of January 13, 2003, the Examiner rejected claims 22-23 and 28-36 under 35 U.S.C. §112, second paragraph. The Examiner then rejected claims 1-5, 21, 24-27, and 47-51 under 35 U.S.C. §102(b) as being anticipated by Caldwell (USP 3,915,136). Claims 6-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Caldwell. Claims 22-23, 28-35, and 52-55 appears to have been rejected under 35 U.S.C. §103(a) over Caldwell in view of Breton.

The Examiner rejected claim 22-23 under 35 U.S.C. §112, second paragraph. The Examiner states that claim 22, lines 4-9 do not positively recite the limitation "the probe." Line 4 of claim 22, in part, calls for "at least partially inserting a probe through an opening in the engine...." Applicant believes that the phrase, "a probe," positively recites the limitation for the probe in this process claim and believes that claim 22 satisfies 35 U.S.C. §112, second paragraph in all regards. Claim 23 depends from claim 22. Therefore, Applicant respectfully requests that the rejection of claims 22-23 under 35 U.S.C. §112, second paragraph be withdrawn.

Next, the Examiner rejected claims 28-36 under 35 U.S.C. §112, second paragraph, and states that the "said probe" limitation lacks antecedent basis. Applicant has amended claim 28 to more clearly define the invention. Applicant has amended "said probe" to "said probe means." Claim 28 provides proper antecedent basis for "said probe means" in the second line of the claim. Claims 29-36 depend directly or indirectly from claim 28. Therefore, Applicant respectfully requests that the rejection of claim 28-36 be withdrawn.

The Examiner rejected claims 1-5, 21, 24-27, and 47-51 under 35 U.S.C. §102(b) as being anticipated by Caldwell. Applicant respectfully disagrees that Caldwell anticipates claims 1-5, 21, 24-27, and 47-51.

Caldwell "relates to improvements in systems for controlling the recirculation of exhaust gases through an internal combustion engine...." Caldwell, col. 1, lns. 17-21. The "vacuum operated exhaust gas recirculation control valve (EGR valve)," 14, "comprises a housing 16 divided by a plate 17 into upper and lower chambers 20, 21. The upper chamber 20 is divided

into upper and lower chamber portions 20a, 20b, by a flexible diaphragm 18." Caldwell, col. 1, lns. 29-30; col. 4, lns. 62-65. The inlet port 22 of lower chamber 21 communicates with the exhaust manifold 15. Caldwell, col. 4, lns. 65-67. Diaphragm 18 connects a valve member 24 "by a stem which extends through a conforming opening in the plate 17 and is moved by deflections of the diaphragm to close and open the port 22." Caldwell, col. 5, lns. 1-5.

Claim 1, in part, calls for a diaphragm housing, a diaphragm positioned in said housing and separating a first chamber and a second chamber, said first chamber configured to be in flow communication with the engine exhaust path, and said second chamber configured to be in flow communication with the engine control unit. The Examiner states that Caldwell discloses a diaphragm housing, 16, a diaphragm, 18, positioned in said housing and separating a first chamber 20a and a second chamber 20b. The Examiner then states that Caldwell, Fig. 1, and column 4, line 62, through column 5, line 18, disclose the first chamber configured to be in flow communication with the engine exhaust path, and said second chamber configured to be in flow communication with the engine control unit.

X { Caldwell does not disclose the first chamber configured to be in flow communication with the engine exhaust path, and said second chamber configured to be in flow communication with the engine control unit. As stated above, the Examiner considers Caldwell to teach a first chamber, designated 20a, and a second chamber, designated 20b. Caldwell teaches that 20a and 20b are upper and lower chamber portions of upper chamber 20. Caldwell, col. 4, lns. 63-65. Upper chamber portion, 20a, is in flow communication with valve controller 34, through the conduit 35. Caldwell, col. 5, lns. 15-23. Lower chamber portion, 20b, "is provided with a port 28 which vents the chamber portion 20b to atmospheric pressure. This permits the diaphragm 18 to flex in accordance with the vacuum level in the chamber 20a with respect to the plate 17." Caldwell, col. 5, lns. 9-12. Neither chamber portion, however, is configured to be in flow communication with an engine exhaust path or an engine control unit. Applicant calls for both in claim 1.

Lower chamber 21 of Caldwell, communicates with an exhaust manifold 15, through an inlet port 22. Caldwell, col. 4, lns. 65-67. The lower chamber 21, however, is neither the first nor the second chamber separated by the diaphragm. Lower chamber 21, is another chamber allowing recirculation of the exhaust gases back to the intake manifold. Caldwell, col. 4, ln. 67 to col. 5, ln. 1. Claim 1, in part, calls for a diaphragm housing separated into a first and a second chamber where one of the chambers flowingly communicates with the exhaust path. Caldwell teaches that a chamber, different from the first and the second chambers separated by the diaphragm, communicates flowingly with the exhaust path. X }

Furthermore, Caldwell discloses three ports in housing, 16, that communicate with other components of the system. A first communication port is described as "an inlet port 22 communicating with the exhaust manifold." Caldwell, col. 4, lns. 66-68. A second communication port is described as "an outlet port 23 communicating with the intake manifold." Caldwell, col. 4, ln. 67 to col. 5, ln. 1. The third communication port is described as an inlet/outlet valve for communicating valve opening vacuum pressure to the upper chamber portion 20a, and for venting the upper chamber portion 20a to atmospheric air pressure. Caldwell, col. 5, lns. 15-23, and col. 7, lns. 52-54. None of these ports is "configured to be in flow communication with [an] engine control unit" as called for in claim 1.

Caldwell does not teach a diaphragm separating a housing into a first and a second chamber where the first chamber is configured to be in flow communication with the engine exhaust path and the second chamber is configured to be in flow communication with the engine control unit. Thus, Applicant believes that claim 1 is not anticipated by Caldwell and respectfully requests that the rejection of claim 1 under 35 U.S.C. §102(b) be withdrawn.

Claim 21, in part, calls for "coupling an outlet of the diaphragm assembly to an electronic control unit of the engine." The Examiner states that Caldwell discloses an outlet, as shown by reference number 23 of Fig. 1, coupled to an electronic control unit of the engine, as shown by Fig. 1 and col. 5, lns. 1-18. Applicant respectfully disagrees that Caldwell discloses an outlet of a diaphragm assembly coupled to an electronic control unit of an engine, as claimed. In fact, not only does Caldwell not even show an electronic control unit it shows no electronics at all!

As stated above, Caldwell relates to the recirculation of exhaust gases of an engine. Inlet port, 22, communicates the lower chamber, 21, with the exhaust manifold. Caldwell, col. 4, ln. 65 to col. 5, ln. 1. The outlet port 23, referenced by the Examiner, communicates lower chamber 21 with the intake manifold. Id. Thus, recirculation of the exhaust gases from the exhaust manifold to the intake manifold is accomplished through the lower chamber 21.

Also, as stated above, none of the ports in the housing is disclosed as being coupled to a control unit of the engine. The port in upper chamber portion 20a of housing 16 communicates with valve controller 34. No outlet of the diaphragm assembly is coupled to an electronic control unit of the engine as called for in claim 21.

Thus, Applicant believes that claim 21 is not anticipated by Caldwell and respectfully requests that the rejection of claim 21 under 35 U.S.C. §102(b) be withdrawn.

Claim 24, in part, calls for "a diaphragm means configured to be coupled between an exhaust path of the engine and an engine control unit and for transmitting exhaust pulses to the control unit." The Examiner states that Caldwell discloses a diaphragm means, as shown by

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reference number 18 of Fig. 1, configured to be coupled between an exhaust path of the engine and an engine control unit and for transmitting exhaust pulses to the control unit. Applicant respectfully disagrees with the Examiner.

Applicant adopts the arguments set forth above with respect to claims 1 and 21. As stated above, none of the ports in the housing taught by Caldwell is disclosed as being coupled as claimed. Therefore, Caldwell does not teach or disclose a "diaphragm means configured to be coupled between an exhaust path of the engine and an engine control unit and for transmitting exhaust pulses to the control unit."

As such, Applicant believes that claim 24 is not anticipated by Caldwell and respectfully requests that the rejection of claim 24 under 35 U.S.C. §102(b) be withdrawn.

Claim 47 calls for "[a] kit for a marine engine, comprising a diaphragm assembly comprising a diaphragm housing, and a diaphragm positioned in said housing and separating a first chamber and a second chamber, said first chamber configured to be in flow communication with an engine control unit, and said second chamber configured to be in flow communication with an engine exhaust path." The Examiner states that reference numbers 16 and 18 of Fig. 1 and col. 4, ln. 62 to col. 5, ln. 18 of Caldwell disclose the elements of claim 47.

Applicant adopts the arguments set forth above with respect to claims 1 and 21 with respect to the engine control unit. As stated above, none of the ports in the housing taught by Caldwell is disclosed as being coupled as claimed. Therefore, Caldwell does not teach, or even suggest such a configuration as claimed, as set forth above. Caldwell further does not have a "first chamber configured to be in flow communication with an engine control unit." Also, Caldwell does not teach or disclose that the first or second chamber created by the diaphragm is configured to be in flow communication with an engine exhaust path.

Accordingly, Applicant believes that claim 47 is not anticipated by Caldwell and respectfully requests that the rejection of claim 47 under 35 U.S.C. §102(b) be withdrawn.

Claims 2-5, 25-27, and 48-51 depend, directly or indirectly, from independent claims 1, 24, and 47. As discussed above, claims 1, 24, and 47 are considered to be patentable over Caldwell. Therefore, claims 2-5, 25-27, and 48-51 are considered to be patentable through the chain of dependency.

The Examiner rejected claims 6-8 under 35 U.S.C. §103(a) as being unpatentable over Caldwell. However, the rejection discusses elements from claim 22. The elements from claim 22 were not discussed further under the Caldwell reference as being obvious over Applicant's invention, but they were discussed later under the Breton reference. However, the Breton

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reference was not a part of the §103 rejection. Clarification is required should the Examiner issue another Office Action, and accordingly, any such action must therefore be non-final.

Claims 6-8 depend, directly or indirectly, from independent claim 1. As discussed above, claim 1 is considered patentable over Caldwell. Therefore, claims 6-8 are considered to be patentable through the chain of dependency.

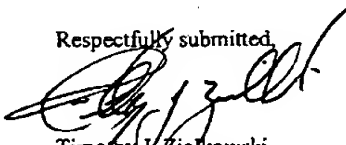
The Examiner provided no basis for the rejection of claims 22-23, 28-35, and 52-55. Claims 22-23, 28-35, and 52-55 depend, directly or indirectly, from independent claims 21, 24, and 47. As discussed above, claims 21, 24, and 47 are considered to be patentable over Caldwell. Therefore, claims 22-23, 28-35, and 52-55 are considered to be patentable at least through the chain of dependency.

Therefore, in light of the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-8, 21-36, and 47-57.

Marked-up versions of the amendments made above may be found on page 7.

Applicant appreciates the Examiner's consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,



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REVISIONS

28. (Once Amended) Apparatus in accordance with Claim 24 further comprising probe means for sensing exhaust gas pressure during engine operation, and engagement means secured to said probe means for securing said probe means so that said probe means at least partially extends within an exhaust path of the engine during engine operation.

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